

CLAIMS

1. (Currently Amended) A metal-oxide-compound semiconductor field effect transistor structure comprising:
 - a nitride compound semiconductor wafer structure having an upper surface;
 - a gate insulator structure comprising a first layer and a second layer;
 - wherein said first layer [substantially] comprises oxygen and [at least one of gallium and] indium, said first layer in contact with said upper surface; and
 - wherein said second layer comprises at least one insulating compound.
- 2-70. (Canceled).
71. (Currently Amended) The structure of claim 1 wherein said at least one insulating compound comprises at least one of indium and gallium.
72. (Currently Amended) The structure of claim 71 wherein said at least one insulating compound comprises at ~~least~~ least one rare earth element.
73. (Previously presented) The structure of claim 1 wherein said at least one insulating compound comprises at least one of oxygen and sulfur.
74. (Previously presented) The structure of claim 1 wherein said at least one insulating compound comprises at least one rare earth element.
75. (Previously presented) The structure of claim 1 further comprising a gate electrode positioned on said gate insulator structure.
76. (Currently Amended) The structure of claim [[72]] 75 further comprising source and drain regions self-aligned to said gate electrode.
77. (Currently Amended) The structure of claim [[72]] 75 wherein said gate electrode comprises a metal selected from the group of refractory gate metals and combinations thereof.
78. (Previously presented) The structure of claim 1 further comprising a substrate.
79. (Previously presented) The structure of claim 78 wherein said nitride compound semiconductor wafer structure is built on said substrate.
80. (Previously presented) The structure of claim 78 wherein said substrate is form from a member selected from the group consisting of sapphire, silicon, silicon on insulator, aluminum nitride, and gallium nitride.
81. (Previously presented) The structure of claim 1 further comprising a layer between said first layer and said second layer having a composition intermediate between the compositions of said first layer and said second layer.
82. (Previously presented) The structure of claim 1 wherein said first layer has a thickness of more than 3 angstroms and less than 25 angstroms.
83. (Previously presented) The structure of claim 1 wherein said gate insulator structure has a thickness of 10-300 angstroms.
84. (Previously presented) The structure of claim 1 wherein said upper surface comprises GaN.
85. (Previously presented) The structure of claim 1 wherein said upper surface comprises $\text{In}_x\text{Ga}_{1-x}\text{N}$.
86. (Previously presented) The structure of claim 1 wherein said upper surface comprises $\text{Al}_x\text{Ga}_{1-x}\text{N}$.
87. (Previously presented) A field effect transistor comprising the structure of claim 1.
88. (Previously presented) An integrated circuit comprising the structure of claim 1.

89. (Currently Amended) A method of making a metal-oxide-compound semiconductor field effect transistor structure comprising:
providing a nitride compound semiconductor wafer structure having an upper surface;
providing a gate insulator structure comprising a first layer and a second layer;
wherein said first layer [substantially] comprises oxygen and [at least one of gallium and] indium, said first layer in contact with said upper surface; and
wherein said second layer comprises at least one insulating compound.

90. (Currently Amended) A method of making a metal-oxide-compound semiconductor field effect transistor structure comprising:
providing a nitride compound semiconductor wafer structure having an upper surface;
depositing a gate insulator structure comprising depositing a first layer and depositing a second layer;

wherein said depositing said first layer comprises depositing oxygen and [at least one of gallium and] indium, onto said upper surface; and

wherein depositing said second layer comprises depositing at least one insulating compound onto said first layer.

91. (Previously presented) A method of using a metal-oxide-compound semiconductor field effect transistor structure, said structure comprising:
a nitride compound semiconductor wafer structure having an upper surface;
a gate insulator structure comprising a first layer and a second layer;
wherein said first layer [substantially] comprises oxygen and [at least one of gallium and] indium, said first layer in contact with said upper surface;
wherein said second layer comprises at least one insulating compound; and
said method comprising applying a voltage to said gate insulator structure.

92. (New) 71. (Currently Amended) The structure of claim 1 wherein said first layer comprises In_2O_3 and Ga_2O_3 .